

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



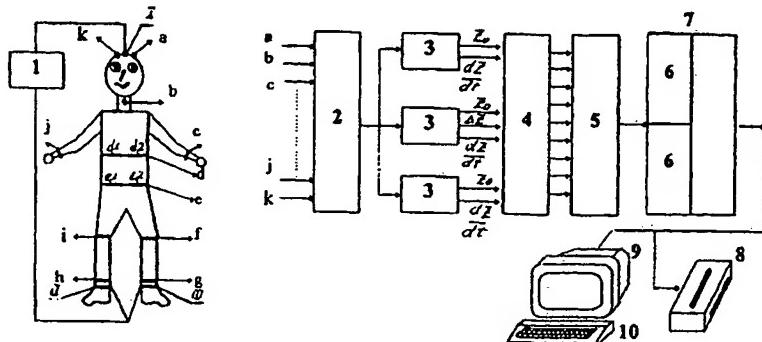
(43) International Publication Date  
16 January 2003 (16.01.2003)

PCT

(10) International Publication Number  
**WO 03/003920 A3**

- (51) International Patent Classification<sup>7</sup>: A61B 5/05,  
G06F 17/00
- (21) International Application Number: PCT/GE02/00006
- (22) International Filing Date: 4 July 2002 (04.07.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
004373 5 July 2001 (05.07.2001) GE
- (71) Applicant and  
(72) Inventor: GEDEVANISHVILI, Gennady [GE/GE]; 9  
app., 42 Saburtalo Street, Tbilisi, 380094 (GE).
- (74) Agent: DARAKHVELIDZE, Liliana; 4 app., 4 Taktakishvili St., Tbilisi, 380079 (GE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
- GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,  
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report  
— before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments
- (88) Date of publication of the international search report:  
17 April 2003
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND DEVICE FOR NON-INVASIVE RESEARCH OF BLOOD DISTRIBUTION AND ITS CIRCULATORY CHARACTERISTICS IN WARM-BLOODED ORGANISM.



WO 03/003920 A3

(57) Abstract: The invention refers to medicine and can be used for assessment of the current status of blood supply in all the regions and vital organs and the reserves of adaptation of an organism as a hemodynamic response of cardiovascular system to a way of life, dosed loading, latent or manifested pathology. Technical result of the invention is an increase in accuracy and self-descriptiveness of measurement. There is provided a connection of the high-frequency generator of a stable sounding current by attaching at least three or five current electrodes, each of the electrodes having at least two sections, to the upper part of a head and to the distal parts or the lower and/or upper extremities and pickup electrodes, each one having at least two sections, in the regions of head, neck, breast, stomach, pelvis, upper and lower extremities of a warm-blooded organism. Gathering and measuring of base impedances and plethysmogram is effected at single-stage, from all the regions of a warm-blooded organism. After processing the obtained data the conclusion is given about the functionalities and adaptation reserves containing the hemodynamic description of the current status of the warm-blooded organism.

## INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 02/00006

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 A61B5/05 G06F17/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 339 722 B1 (HEETHAAR ET AL.) 15 January 2002 (2002-01-15) abstract column 1, line 37 -column 2, line 3 column 3, line 18 -column 4, line 34 column 4, line 66 -column 6, line 65; figures 1,2	1,2
X	WO 98 53737 A (N. I. MEDICAL LTD.) 3 December 1998 (1998-12-03) abstract page 2, line 1 -page 6, line 26 page 17, line 25 -page 18, line 29; figures 1-3	1,2 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*g\* document member of the same patent family

Date of the actual completion of the international search

24 January 2003

Date of mailing of the international search report

03/02/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Beitner, M

## INTERNATIONAL SEARCH REPORT

International	Application No
PCT/GE 02/00006	

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 161 038 A (SCHOOKIN ET AL.) 12 December 2000 (2000-12-12) abstract column 3, line 6-52 column 5, line 60 -column 8, line 40; figures 2-4,13,14 ----	1,2
A	US 5 178 154 A (ACKMANN ET AL.) 12 January 1993 (1993-01-12) abstract column 3, line 33 -column 6, line 29; figure 1 ----	1
A	US 5 685 316 A (SCHOOKIN ET AL.) 11 November 1997 (1997-11-11) abstract column 4, line 26 -column 6, line 43; figures 1-3 ----	1
A	DE 199 14 437 A (SEIFERT, HANS KARL, DIPL.-ING.) 5 October 2000 (2000-10-05) the whole document ----	1,2

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/GB 02/00006

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6339722	B1	15-01-2002	NL	1001282 C2		28-03-1997
			AT	222726 T		15-09-2002
			AU	7146996 A		17-04-1997
			DE	69623304 D1		02-10-2002
			EP	0855875 A2		05-08-1998
			JP	11511371 T		05-10-1999
			WO	9711638 A2		03-04-1997
			NO	981304 A		15-05-1998
WO 9853737	A	03-12-1998	WO	9853737 A1		03-12-1998
			AU	2913397 A		30-12-1998
US 6161038	A	12-12-2000	US	5685316 A		11-11-1997
			AU	748652 B2		06-06-2002
			AU	2420097 A		29-10-1997
			EP	0901342 A1		17-03-1999
			JP	2000508194 T		04-07-2000
			CA	2251250 A1		16-10-1997
			CN	1221325 A		30-06-1999
			EP	1078597 A2		28-02-2001
			WO	9737591 A1		16-10-1997
US 5178154	A	12-01-1993	NONE			
US 5685316	A	11-11-1997	AU	748652 B2		06-06-2002
			AU	2420097 A		29-10-1997
			CA	2251250 A1		16-10-1997
			CN	1221325 A		30-06-1999
			EP	1078597 A2		28-02-2001
			EP	0901342 A1		17-03-1999
			JP	2000508194 T		04-07-2000
			WO	9737591 A1		16-10-1997
			US	6161038 A		12-12-2000
DE 19914437	A	05-10-2000	DE	19914437 A1		05-10-2000